

Table of Contents:

1. [Data Set Description](#)
2. [Sample Data Record/Data Format](#)
3. [References](#)
4. [Contact Information](#)
5. [Acknowledgement](#)

1. Data Set Description:

Data are available for samples collected using Partisol Model 2025-D samplers between late 2000 and late 2003 variously from sites at Downey, Claremont, Riverside, Rubidoux, and the University of Southern California (USC). Samples were collected episodically, frequently for a 24-hour per period, but in some cases multiple samples were collected over the course of a day. Element/metals, nitrate/sulfate ion, and mass concentration data were obtained.

The Partisol is a dichotomous sequential multi-filter air sampler. It uses a virtual impactor to divide the air stream to facilitate the collection of fine (0.0-2.5 μ m) and coarse (2.5-10.0 μ m) particles onto a filter media over a pre-programmed collection period. The coarse fraction was analysed using X-ray fluorescence and mass concentration analysis. Ion chromatography and mass concentration analyses were performed on the fine fraction.

The overall objective of the **Southern California Supersite (SCS)** was to conduct research and monitoring that contributes to a better understanding of the measurement, sources, size distribution, chemical composition, physical state, spatial and temporal variability, and health effects of suspended particulate matter (PM) in the Los Angeles Basin (LAB). Intensive aerosol measurements, well beyond the traditional PM_{2.5} mass, sulfate and nitrate concentrations, were conducted in several areas of the LAB. These included particle number concentrations, size distributions, and detailed PM chemical composition as a function of particle size. Sampling locations were chosen to provide wide geographical and seasonal coverage, including urban "source" sites and downwind "receptor" sites. The primary sampling facility, a mobile Particle Instrumentation Unit (PIU), was deployed to several locations to conduct a wide range of PM measurements. Sampling in each site lasted for 6-12 months. Intensive PM measurements were also conducted up and downwind of several freeways of the LAB, to characterize near-roadway exposure environments and to support several in vivo and in vitro health studies. The monitoring activities of the SCS were linked with toxicology studies in the LAB using a mobile PM Concentrator facility to investigate health effects associated with exposures to ultrafine, fine and coarse particles. Finally, the PIU facility was successfully used as a platform to develop, test, and evaluate numerous PM measurement instruments and sampling technologies, including several monitors for semi-continuous size fractionated mass and chemistry, personal PM exposure monitors, particle concentration technologies, and particle counting devices.

The [U.S. EPA Particulate Matter \(PM\) Supersites Program](#) was an ambient air monitoring research program from 1999-2004 designed to provide information of value to the atmospheric sciences, and human health and exposure research communities. Eight geographically diverse projects were chosen to specifically address these EPA research priorities: (1) to characterize PM, its constituents, precursors, co-pollutants, atmospheric transport, and its source categories that affect the PM in any region; (2) to address the research questions and scientific uncertainties about PM source-receptor and exposure-health effects relationships; and (3) to compare and evaluate different methods of characterizing PM including testing new and emerging measurement methods. Data collected by these projects are publicly available at the NARSTO Permanent Data Archive, NASA Langley Atmospheric Science Data Center. Data users should acknowledge the U.S. EPA Particulate Matter (PM) Supersites Program and the project investigator(s) listed below.

The data set should be cited as follows:

Sioutas, Constantinos, Rong Chun (RC) Yu. 2010. NARSTO EPA_SS_LOS_ANGELES PM_{2.5}-10 Composition and Mass Data (Partisol). Available on-line from [NARSTO Data and Information](#) at the Atmospheric Science Data Center at NASA Langley Research Center, Hampton, Virginia, U.S.A.

More information can be found at the [Southern California Particle Center](#) site.

2. Sample Data Record/Data Format:

Data files are in the NARSTO Data Exchange Standard (DES) format that is described in detail on the [NARSTO Quality Systems Science Center \(QSSC\) web site](#). The files follow a tabular layout and are stored as ASCII comma-separated values files (.csv). The DES does not



rely on row position to identify specific information, but uses a tag to describe the information contained in the row. The DES is a self-documenting format with three main sections: the header contains information about the contents of the file and the data originator; the middle section contains metadata tables that describe/define sites, flags, and other codified fields; and the final section is the main data table that contains key sampling and analysis information and the data values. Descriptions of the standardized metadata fields are also available on the QSSC web site.

Data Usage Notes

- **Data Filename Date Issue:**
 - For NARSTO_EPA_SS_LA_RBDX_PARTISOL_IONS_20010607_20010907_V1.csv the filename does not accurately represent the date range of the content. This file contains data from samples with starting dates from June 27, 2001 through September 07, 2001.
- **MASS Data File Row Totals:**
 - Please note that some data rows in the Partisol MASS files present results that are totals of results in other rows. Check the columns named "Particles: lower diameter bound" and "Particles: upper diameter bound" to understand this reporting convention.

Reporting and Flagging of "Element" Data File Values

- **Data Reporting:**
 - Original concentrations of elements less than 3*uncertainty (3*Sigma) or less than detection limit are reported as "0" and are flagged either "V4" or "V1".
 - Detection Limits (DL) are reported for each variable and Partisol stage. The DL was converted from (ug/filter) to (ug/m3) by dividing by the volume of air sampled.
 - Uncertainties are reported for each variable and Partisol stage which were derived as 1 standard deviation (1 Sigma) from Gaussian Distribution. Uncertainty was converted from (ug/filter) to (ug/m3) by dividing by the volume of air sampled.
 - Original concentration (OC) greater than 3*uncertainty (3*Sigma), detection limit or (blank median*deposit area) were adjusted by the blank median as: Corrected Concentration=Original Concentration - (blank median*deposit area), where the deposit area data were from Chester Lab.
 - The blank sample size at each site and the median concentration for metal/element are given in each site's data file. The blank median was converted from (ug/cm2) to (ug/filter) as: Blank(ug/ filter)= Blank(ug/cm2) * Deposit Area(cm2/ filter). [For example, At this site, blank sample size was 39. The medians for each metal/element are: Ag=0.0017, Al=0, As=0, Ba=0.0306, Br=0.0001, Ca=0.0017, Cd=0, Cl=0, Co=0, Cr=0.0003, Cu=0, Fe=0.0049, Ga=0, Ge=0.0005, Hg=0, In=0.0001, K=0, La=0.0001, Mg=0, Mn=0.0001, Mo=0.0005, Na=0.0525, Ni=0, P=0.0004, Pb=0, Pd=0.0017, Rb=0, S=0.0037, Sb=0, Se=0.0006, Si=0.0037, Sn=0.0024, Sr=0, Ti=0, V=0, Y=0, Zn=0.0009, Zr=0.]
- **Data Flagging:**
 - Original concentration (OC) was compared with 3*uncertainty (3*Sigma) and Detection Limit (DL). If $OC < 3*Sigma < DL$ or $DL < OC < 3*Sigma$ then the OC was flagged as "V4".
 - Similarly, if $OC < DL < 3*Sigma$ or $3*Sigma < OC < DL$, it was given a flag of "V1".
 - Otherwise, for $OC > \text{both } DL \text{ and } 3*Sigma$, the label "V0" was given.
 - If $OC > \text{both } DL \text{ and } 3*Sigma$ but $OC < (\text{blank median} * \text{deposit area})$, a flag "V4" was given.

Outlier Detection for All Data Types

- Outliers were detected by a modified Z-score method. Statistical discussions about this method can be found in "Quality Control of Semi-Continuous Mobility Size-Fractionated Particle Number Concentration Data", Rong Chun Yu et al. (2004). Flag "V4" was given for the outliers.

Additional documentation is provided in the element data files.

Time-Series Plots

Time-series plots are included for all of the numeric variables in each of the data files. These plots are useful for screening for outliers and visualization of values less than the detection limit and values with other quality flags. Please note that some but not all of the plots were visually examined for possible outliers and other issues.

Data Files	Links to Time-Series Plots (PDF)
NARSTO_EPA_SS_LA_CLMT_PARTISOL_ELEMENT_20010928_20020821_V1.csv	View CLMT PARTISOL ELEMENT 20010928 20020821
NARSTO_EPA_SS_LA_CLMT_PARTISOL_IONS_20010928_20020806_V1.csv	View CLMT PARTISOL IONS 20010928 20020806



NARSTO_EPA_SS_LA_CLMT_PARTISOL_MASS_20010928_20020821_V1.csv	View CLMT_PARTISOL_MASS_20010928_20020821
NARSTO_EPA_SS_LA_DWNY_PARTISOL_ELEMENT_20001214_20001214_V1.csv	View DWNY_PARTISOL_ELEMENT_20001214_20001214
NARSTO_EPA_SS_LA_DWNY_PARTISOL_MASS_20001003_20001214_V1.csv	View DWNY_PARTISOL_MASS_20001003_20001214
NARSTO_EPA_SS_LA_RBDX_PARTISOL_IONS_20010607_20010907_V1.csv	View RBDX_PARTISOL_IONS_20010607_20010907
NARSTO_EPA_SS_LA_RBDX_PARTISOL_MASS_20010627_20010907_V1.csv	View RBDX_PARTISOL_MASS_20010627_20010907
NARSTO_EPA_SS_LA_RVSD_PARTISOL_ELEMENT_20010314_20010607_V1.csv	View RVSD_PARTISOL_ELEMENT_20010314_20010607
NARSTO_EPA_SS_LA_RVSD_PARTISOL_IONS_20010314_20010606_V1.csv	View RVSD_PARTISOL_IONS_20010314_20010606
NARSTO_EPA_SS_LA_RVSD_PARTISOL_MASS_20010221_20010606_V1.csv	View RVSD_PARTISOL_MASS_20010221_20010606
NARSTO_EPA_SS_LA_USC_PARTISOL_ELEMENT_20021017_20030611_V1.csv	View USC_PARTISOL_ELEMENT_20021017_20030611
NARSTO_EPA_SS_LA_USC_PARTISOL_IONS_20021017_20030807_V1.csv	View USC_PARTISOL_IONS_20021017_20030807
NARSTO_EPA_SS_LA_USC_PARTISOL_MASS_20021017_20030918_V1.csv	View USC_PARTISOL_MASS_20021017_20030918

3. References:

- Rong Chun Yu, Hee Wen Teh, Peter A. Jaques, Constantinos Sioutas, John R. Froines. 2004. Quality control of semi-continuous mobility size-fractionated particle number concentration data. Atmospheric Environment, Volume 38, Issue 20, Pages 3341-3348.
- Shen S, Jaques PA, Zhu YF, Geller MD, Sioutas C. 2002. Evaluation of the SMPS-APS system as a continuous monitor for measuring PM2.5, PM10 and coarse (PM2.5-10) concentrations. ATMOSPHERIC ENVIRONMENT 36(24) 3939-3950.

4. Contact Information:

Investigator(s) Name and Title:

Name: Sioutas, Dr. Costas
E-mail: sioutas@rcf.usc.edu
Name: Yu, Dr. Rong Chun
E-mail: TBD

Data Center:

The User and Data Services Office at the Langley Atmospheric Science Data Center is involved throughout the system to monitor the quality of data on ingest, to ensure prompt replies to user questions, to verify media orders prior to filling them, and to ensure that the needs of the users are being met.

If you have a problem finding what you need, trouble accessing the system, or need an answer to a question concerning the data or how to obtain data, please contact the User and Data Services staff.

Telephone: (757) 864-8656
FAX: (757) 864-8807
E-mail: support-asdc@earthdata.nasa.gov
URL: <http://eosweb.larc.nasa.gov>



5. Acknowledgement:

When data from the Langley Atmospheric Sciences Data Center are used in a publication, we request the following acknowledgment be included: "These data were obtained from the NASA Langley Research Center Atmospheric Science Data Center".

The Langley Data Center requests a reprint of any published papers or reports or a brief description of other uses (e.g., posters, oral presentations, etc.) of data that we have distributed. This will help us determine the use of data that we distribute, which is helpful in optimizing product development. It also helps us to keep our product-related references current.

Please contact us at support-asdc@earthdata.nasa.gov for instructions on mailing reprints.

Document Information:

Document Creation Date: September 16, 2010

Review Date:

Last Date Modified:

Document ID: TBD

Author: Langley Data Center User and Data Services Office

Langley DAAC Help Desk: Phone (757) 864-8656; E-mail: support-asdc@earthdata.nasa.gov

